

HAEGIELA, A NEW GENUS OF AUSTRALIAN ASTERACEAE (INULEAE: GNAPHALIINAE), WITH NOTES ON THE GENUS EPALTES Cass.

by

P. S. SHORT* and PAUL G. WILSON†

ABSTRACT

Short, P. S. and Wilson, Paul G. *Haegiela*, a new genus of Australian Asteraceae (Inuleae: Gnaphaliinae), with notes on the genus *Epaltes* Cass. *Muelleria* 7(2): 259–265 (1990). The monotypic, endemic Australian genus, *Haegiela* P. S. Short & Paul G. Wilson, is described. The new combination *Haegiela tatei* (F. Muell.) P. S. Short & Paul G. Wilson is made, a lectotype is selected, and notes on the distribution, habitat and affinities of the genus are provided. The genus *Epaltes* Cass. is considered not to occur in Australia; an indication is given of the correct placement of those Australian species currently included in it.

INTRODUCTION

Epaltes Cass. is well known to be a heterogeneous taxon (Merxmüller *et al.* 1978) and for some years we have been aware that *E. tatei* F. Muell. must be excluded from the genus. In his original description of *E. tatei*, Mueller (1833, pp. 31–32) noted that he had not ventured 'to exclude this interesting little weed from a generic position in *Epaltes*' although various features warranted the assignation 'to the species sectional rank under the name *Petalopholis*'. The aberrant position of *E. tatei* in the genus was also noted by Leins (1971). With an account of the Asteraceae due for the *Flora of Australia* in the 1990s we take this opportunity to describe the genus.

The study of *E. tatei* required us to examine Australian taxa currently placed in *Epaltes*; these were found to belong to other genera of the Plucheinae.

TAXONOMY

Haegiela P. S. Short *et* Paul G. Wilson, *gen. nov.*

Herba annua, indumentum eglandulosum, arachnoideum pilis basin squamiformibus. *Axes majores* ascendentes usque erecti. *Folia* sessilia, bases versus ad ramos laterales adnata, integra, alterna, ovata ad lanceolata vel obovata, infima opposita. *Ramificatio* monopodialis; capitula solitaria, ut videtur subsessilia et axillaria, heterogama, c. 2–3 mm diametro. *Bractee involucri* c. 15–20, in seriebus tribus ordinatis; bractee exteriores imbricatae, ovatae ad late ovatae vel late ellipticae, scariosae, translucentes, argenteae, quidem marginibus superioribus viliatis, raro bracteo infimo foliiformi; bractee interiores subcartilagineae, teretes, bracteis exterioribus c. 1/2 breviores, interdum apicibus hyalinis ciliatis. *Receptaculum* planum, glabrum. *Flosculi* 36–60. *Flosculi exteriores* filiformi, feminei, 22–49. *Flosculi interiores* hermaphroditi, 7–11; corolla tubulares, versus apicem subercolata; lobi 4, brevissimi, facie interiora papilloso. *Stamina* 4; antherae caudae filamentosae; appendices steriles breviter oblongae, cellulis oblongis (parietibus tenuibus) fabricatis. *Stylus* filiformis, ramis brevissimis, truncatis. *Cypselae* subobovoideae vel ellipsoideae, subpapillatae; carpodium parvum; pericarpium hyalinum testam tenuem conjunctum. *Pappus* carens.

TYPUS: *H. tatei* (F. Muell.) P. S. Short & Paul G. Wilson

Annual herb. *Major axes* ascending to erect; indumentum eglandular, cobwebby with filamentous, linear, multicellular hairs that become flattened at the base. Branching monopodial, the axis terminating in a capitulum. *Leaves* sessile, towards the base adnate to the lateral branch, entire, ovate to lanceolate or obovate or linear, at least the lower ones opposite and connate. *Capitula* axillary, solitary, subsessile, heterogamous, c. 2–3 mm diam. *Involucral bracts* c. 15–20, in 3 rows, all bracts

* National Herbarium of Victoria, Birdwood Avenue, South Yarra, Victoria, Australia 3141.

† Western Australian Herbarium, P.O. Box 104, Como, Western Australia, Australia 6152.

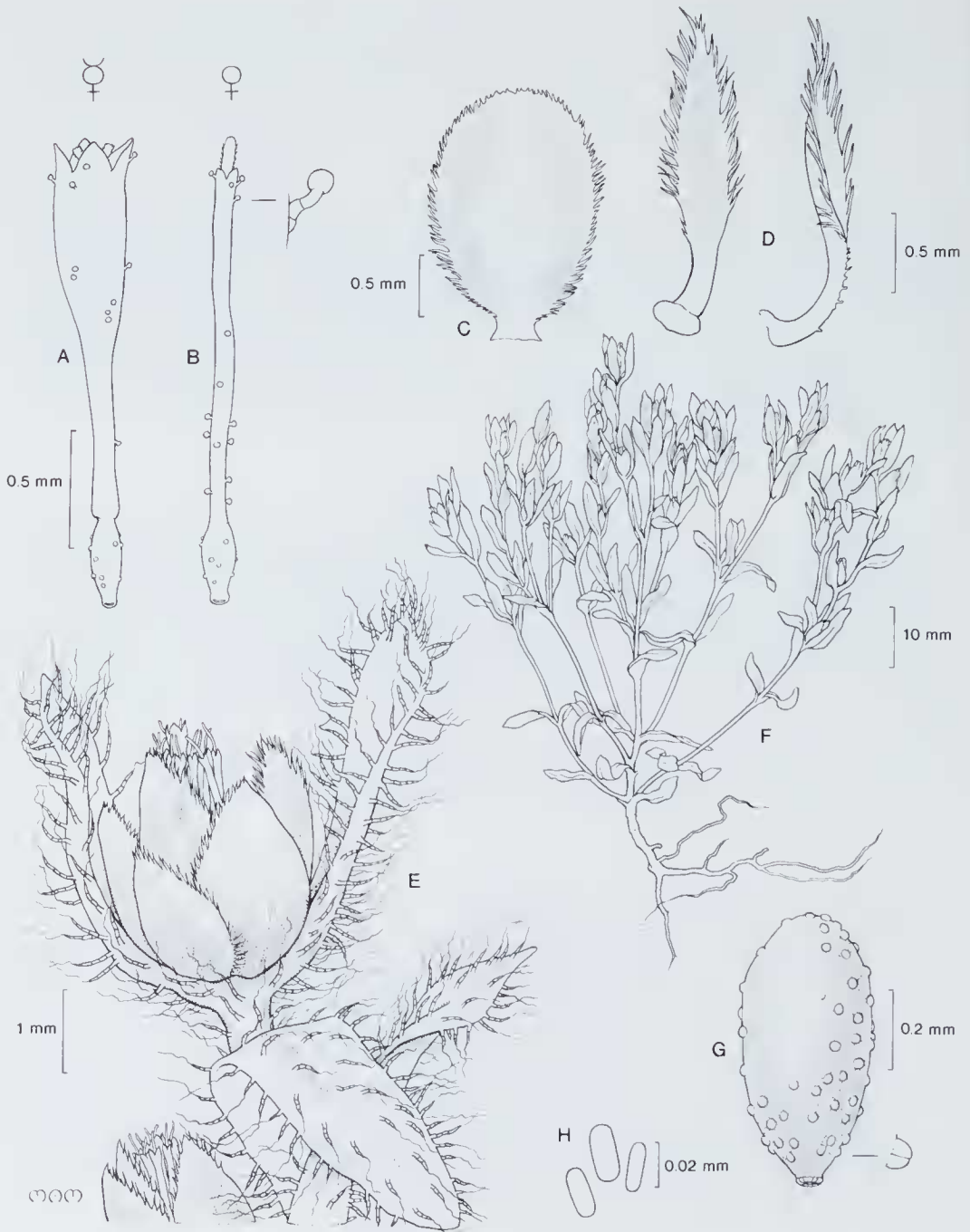


Fig. 1. *Haegiela tatei*. A—Bixexual floret. B—Female floret. C—Outer involucre bract. D—Inner involucre bract (adaxial and lateral views). E—Capitulum and portion of branch. F—Whole plant. G—Cypsela. H—Crystals from testa.

prominently incurved; outer bracts imbricate, ovate to widely ovate or widely elliptic, scarious, silvery translucent, at least the upper margins ciliate; innermost bracts subcartilaginous, terete, with a ciliate, hyaline apex, in all *c.* 1/3–1/2 length of the outer bracts. *Receptacle* flat, glabrous. *Florets* 36–60, just exceeding the involucre. *Outer florets* female, 22–49; corolla filiform. *Inner florets* bisexual, 7–11; corolla

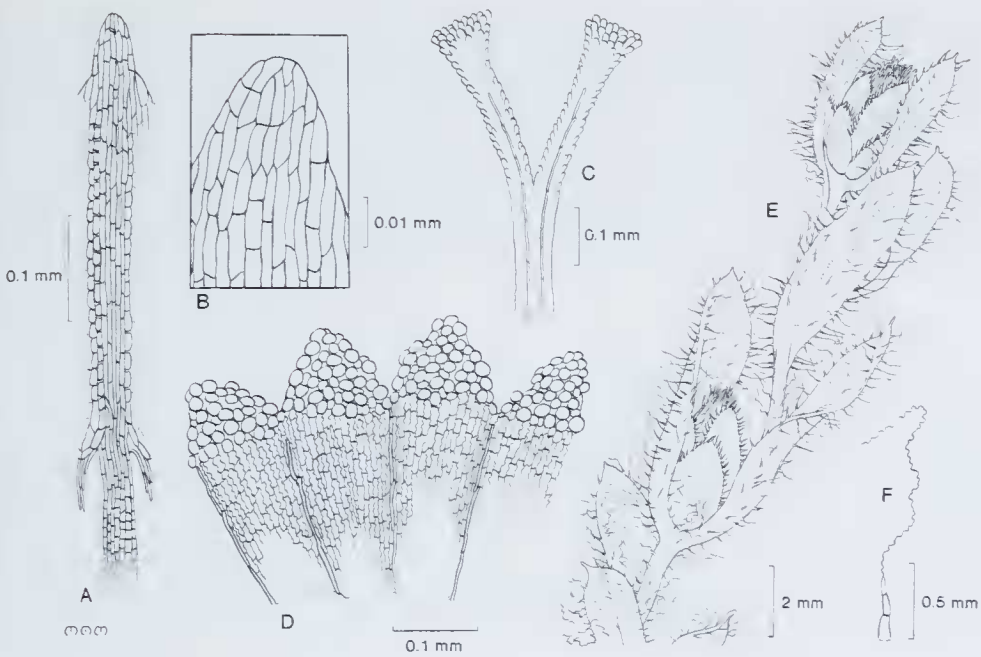


Fig. 2. *Haegiela tatei*. A—Anther. B—Apical appendage of anthers. C—Style branches. D—Corolla apex displayed (adaxial surface). E—Branch. F—Hair from leaf.

cylindrical, sparsely and minutely glandular puberulous. urceolate in throat; lobes 4, very short, papillose within; vascular strands of tube not extending to base of lobes; inner epidermal cells of throat undulate on margin. *Stamens* 4; anthers caudate; tails filamentous; sterile apical appendage short-oblong, delicate with oblong, thin-walled cells; filament collar straight in outline and not wider than the filament. *Style* filiform, branches very short, truncate apically. *Cypselas* obovoid or ellipsoid, minutely papillose with twinned cells; pericarp hyaline with two vascular bundles; testa very thin, intimately fused to pericarp when mature, containing numerous oblong crystals longitudinally arranged; vascular strands not apparent; carpodium present. *Pappus* annular. (Figs 1, 2)

DISTRIBUTION (Fig. 3):

Monotypic. Widely dispersed in Western Australia, South Australia and western Victoria, south of c. 31° S.

ETYMOLOGY:

The name *Haegiela* is an anagram derived from the names and honouring our colleague at AD, Dr Laurie Haegi.

NOTES:

Burbidge (1963) recognized five species of *Epaltes* as occurring in Australia. The fact that *Epaltes tatei* is markedly dissimilar from the other species placed in the genus was realized by Leins (1971) who noted the truncate style arms and the different pollen structure. He suggested that it be removed from the *Plucheinae*—or *Pluchea* group (sensu Merxmüller *et al.* 1977) and indicated that its affinities lay with *Stuartina* Sonder, a member of the *Gnaphaliinae* (sensu Merxmüller *et al.*). However, although it undoubtedly belongs to the latter subtribe its affinities with *Stuartina* do not appear to be close since this latter genus has cartilaginous involucre bracts, conical corollas with undulate cell margins and glandular papillae on the

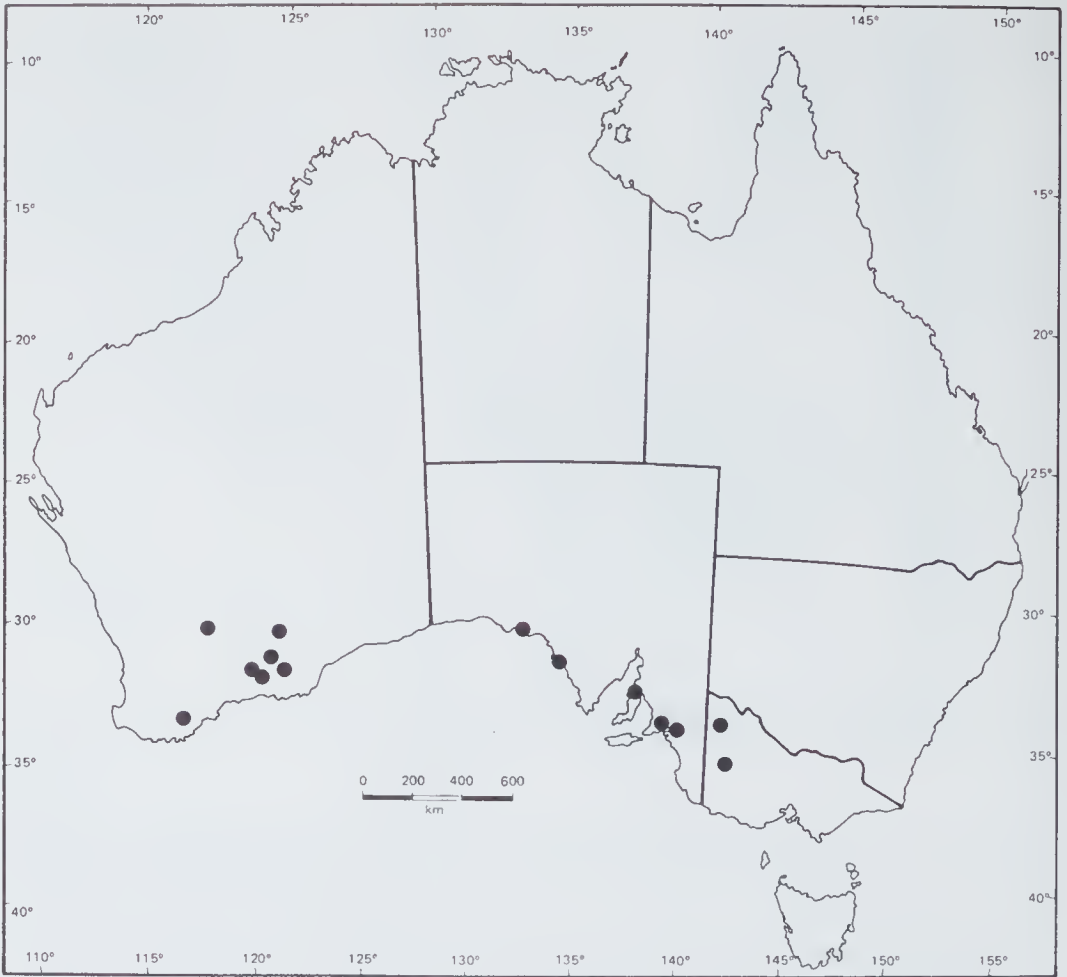


Fig. 3. Distribution of *Haegiela tatei*.

cypsela. The actual affinities of *Haegiela* are with *Triptilodiscus* Turcz., a monotypic genus which is similar to *Haegiela* in habit, branching structure, leaf morphology, capitulum, involucre bracts, and in some details of the florets. It differs from *Haegiela* in the absence of crystals in the testa, and in the presence of a pappus which consists of two or three flat, plumose-ciliate bristles in the bisexual florets but which may be reduced to a ciliate ring in female florets.

Four other Australian species are currently referred to *Epaltes*. Material of *Epaltes cunninghamii* (Hook.) Benth. and *E. australis* Less. has been examined and compared with authentic material of *E. divaricata* (L.) Cass., the type of the genus. All three species have similar corolla, anther, and style structures and undoubtedly belong to the same subtribe, the Plucheinae; however, they differ considerably from each other in habit and in fruit structure. In *E. divaricata* the cypsela is cylindrical, strongly ribbed with rows of large twin-celled papillae between the ribs. In *E. australis* the cypsela is cylindrical with long, duplex setae principally at the base, and scattered, short multicelled, glandular hairs; this species was considered by Merxmüller *et al.* (1976) to belong to the monotypic genus *Sphaeromorphaea* DC. (1838) and, according to Leins (1971), is closely related to *Thespidium* F. Muell. ex Benth. (1867). In *E. cunninghamii* the cypsela is curved, smooth except for a rib on the concave adaxial face beneath which lies the solitary pericarpial vascular strand; this species was placed by Mueller (1861) in his monotypic genus *Ethuliopsis* (syn. *Gynaphanes* Steetz,

1864) as *E. dioica* F. Muell. Both *E. australis* and *E. divaricata* have cypselas that have a pair of opposite pericarpal strands, as is typical in the Asteraceae. It would seem reasonable to place *E. australis* in the genus *Sphaeromorphaea* as *S. australis* (Less.) Kitamura (1936) and *E. cunninghamii* in the genus *Ethuliopsis* where a new combination is required for it.

The two other Australian species placed in *Epaltes* are *E. pleiochaeta* F. Muell., which was placed by Mueller in *Epaltes* sect. *Ethuliopsis* (F. Muell.) F. Muell. (1877), and *E. harrisii* F. Muell. (1880). Neither of these species is known to the authors (MEL material being inaccessible at the time of writing), but their descriptions do not suggest affinity with *Haegiela*.

Haegiela tatei (F. Muell.) P. S. Short et Paul G. Wilson, *comb. nov.*

BASIONYM: *Epaltes tatei* F. Muell., Trans. & Proc. Roy. Soc. S. Aust. 6: 31 (Dec. 1883); J. M. Black, Fl. S. Aust. 1st ed. 618 (1929), 2nd ed. 895 (1957); J. H. Willis, Handb. Pl. Vict. 2:699 (1973). TYPE: 'On sandy scrub-lands between Wellington and Mason's Look-Out, at the east side of Lake Alexandrina. (Prof. R. Tate)'; 'from the vicinity of Spencer's Gulf'. LECTOTYPE (here designated): Scrub near Wellington, 2.x.1880. *Tate s.n.* (MEL 1551068 *p.p.*). ISOLECTOTYPES: Sandy scrubland W Wellington Lodge, 2.x.1880. *Tate s.n.* (AD 97624341 *p.p.*); Fowler's Bay and Scrub between Wellington E & Mason's lookout (E of lake Alexandrina), 2.x.1880. (AD 97643080 *p.p.*, *ex herb.* J. M. Black). POSSIBLE LECTOPARATYPE: MEL 1551068 *p.p.* See Notes.

Annual herb. Major axes ascending to erect, *c.* 2–8 cm long. *Leaves* ovate to lanceolate or obovate or linear, 2.5–6.7 mm long, 0.5–1.9 mm wide, glabrous or cobwebby. *Capitula* *c.* 2–3 mm diam. *Involucral bracts* *c.* 15–20, in 3 rows, all bracts prominently incurved; outer bracts ovate to widely ovate or widely elliptic, 2.4–3.5 mm long, 0.8–1.9 mm wide, scarious, silvery translucent, at least the upper margins ciliate; innermost bracts subcartilaginous, terete, with a small ciliate hyaline apex, in all 1–1.5 mm long, *c.* 0.2 mm wide. *Receptacle* flat, glabrous. *Outer florets*, female, 22–49; corolla *c.* 1.5 mm long. *Inner florets* bisexual, 7–11; corolla *c.* 1.5 mm long; lobes 4, minute, papillose within, sparsely glandular puberulous outside. *Stamens* 4; anthers 0.41–0.5 mm; microsporangia 0.31–0.41 mm long; apical appendages triangular, 0.08–0.1 mm long. *Cypselas* obovoid or ellipsoid, 0.5–0.7 mm long, 0.25–0.35 mm diam. *Pappus* absent.

DISTRIBUTION:

See generic treatment.

ECOLOGY & REPRODUCTIVE BIOLOGY:

Apparently restricted to saline habitats, as reflected by the following collectors' notes: '... saline depression. *Halosarcia* sp., *Lawrenzia squamata*, *Hydrocotyle medicaginoides*, *Angianthus preissianus*'; 'edge of ... saline depression ... in low shrubland [with] *Halosarcia* sp., *Rhagodia candolleana*, *Frankenia pauciflora*'; 'In higher parts of samphire with *Halosarcia pergranulata*, *H. pruinosa*. Gypseous soil.' and 'Margin of samphire mud flats/salt swamp ... in small patches in sand ... [with] dwarf shrubs of *Frankenia* & *Chenopodiaceae*'.

The inconspicuous habit of the plant, its anther size and a pollen:ovule ratio of *c.* 56 (determined from a single capitulum with 9 bisexual florets, 31 female florets and a total of 248 pollen grains in the bisexual floret examined) are indicative of self-pollination.

NOTES:

The lectotype sheet contains two labels. One is a standard, blue, herbarium label and has the words 'Entrance of the Murray-River. (1883). 1886 Prof. Tate'. The other, an original label in Tate's hand, has 'Composite. Scrub near Wellington.

Oct. 2, 1880 (*R. Tate*).’ The sheet contains a single specimen directly attached to it, and a fragmentary collection contained in a paper envelope.

At first glance the labels and specimens cannot be unequivocally matched. However, in the original description Mueller refers to a plant ‘with stems numerous from a slender root, not exceeding two inches in height’, a description readily applicable to the entire specimen attached to the sheet, but not to the fragmentary collection. Furthermore, this same specimen, which is selected as the lectotype, is most likely to be associated with the original label in Tate’s hand. The label has two parallel slits which at one stage presumably accommodated the specimen. The view that Mueller examined only a single specimen is also supported by a letter (dated 19 Feb. 1883, original Barr Smith Library, Uni. of Adelaide, copy at MEL) in which Mueller recorded that ‘Some time ago, dear Prof. Tate, I had made some notes on the curious little Composite, which you collected on 2 Oct. 1880 near Wellington, and of which you sent me a specimen . . .’.

The fragmentary material in the envelope may be a lectoparatype to which the standard, blue, herbarium label refers. However, although the locality data on the label is more or less equatable with that in the protologue, one of the two dates cited, *i.e.* 1886, suggest that the fragmentary collection was gathered after publication of the species name.

The isolectotype sheet AD 97624341 contains two collections, *i.e.* the type material and a collection gathered by A. F. Richards from Fowlers Bay. Both specimens were apparently part of the Tate herbarium. It is difficult to match the labels with the specimens although the isolectotype material seems to consist of a single, much branched plant.

The isolectotype sheet AD 97643080 contains fragmentary material obtained by J. M. Black from the Tate herbarium. It is unclear as to what specimens relate to the Wellington (type) collection.

There is no indication on the sheets that Mueller saw either of the AD isolectotypes.

In the original description Mueller noted that the species had been known to him for many years from specimens gathered near Spencer’s Gulf. Collections with this locality data have not been located at MEL.

SELECTED SPECIMENS EXAMINED (Total c. 35):

Western Australia—5 km S of Peak Eleanor, 8.xi.1979, *Newbey 6347* (PERTH); 5.5 km E of Yellowdine, 4.xi.1983, *Haegi 2549 & Short* (MEL); 47 km E of Cranbrook along Salt River Road, 10.xi.1986, *Paul G. Wilson 12361* (PERTH).

South Australia—12.5 km NE of Meningie, 30.x.1986, *Davies et al 67* (AD); 19 km SSE of Wellington, 31.x.1986, *Davies et al. 72* (AD); Point Sinclair, 16.ix.1971, *Eichler 21372* (AD).

Victoria—Mitre Flora & Fauna Reserve, 11.xi.1986, *Beaglehole 80521* (MEL); Pink Lakes State Park, 20.x.1983, *Browne 189* (MEL).

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